

SEQUENCE LISTING

<110> Scott, Fred W.

<120> Recombinant Multivalent Viral Vaccine

<130> 18617.0016

<140> 08/552,369

<141> November 3, 1995

<160> 25

<210> 1

<211> 2254

<212> DNA

<213> feline panieukopenia virus

<220>

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 Arg Asn Glu Arg Ala Thr Gly Ser Gly Asn Gly Ser Gly Gly
 20 25 30

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agt gaa aat tat aaa aga gta gtt gta aat aat atg gat aaa act			270
Ser Glu Asn Tyr Lys Arg Val Val Val Asn Asn Met Asp Lys Thr			
80	85	90	
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Ala Val Lys Gly Asn Met Ala Leu Asp Asp Thr His Val Gln Ile			
95	100	105	
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Val Thr Pro Trp Ser Leu Val Asp Ala Asn Ala Trp Gly Val Trp			
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Phe Asn Pro Gly Asp Trp Gln Leu Ile Val Asn Thr Met Ser Glu			
125	130	135	
ttg cat tta gtt agt ttt gaa caa gaa att ttt aat gtt gtt tta			450
Leu His Leu Val Ser Phe Glu Gln Glu Ile Phe Asn Val Val Leu			
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Lys Thr Val Ser Glu Ser Ala Thr Gln Pro Pro Thr Lys Val Tyr			
155	160	165	
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Asn Asn Asp Leu Thr Ala Ser Leu Met Val Ala Leu Asp Ser Asn			
170	175	180	
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Asn Thr Met Pro Phe Thr Pro Ala Ala Met Arg Ser Glu Thr Leu			
185	190	195	
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Gly Phe Tyr Pro Trp Lys Pro Thr Ile Pro Thr Pro Trp Arg Tyr			
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Tyr Phe Gln Trp Asp Arg Thr Leu Ile Pro Ser His Thr Gly Thr			
215	220	225	

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Ser Gly Thr Pro Thr Asn Ile Tyr His Gly Thr Asp Pro Asp Asp		
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gtt caa ttt tat act att gaa aat tct gtg cca gta cac tta cta		765
Val Gln Phe Tyr Thr Ile Glu Asn Ser Val Pro Val His Leu Leu		
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Arg Thr Gly Asp Glu Phe Ala Thr Gly Thr Phe Phe Asp Cys		
260	265	270
aaa cca tgt aga cta aca cat aca tgg caa aca aac aga gca ttg		855
Lys Pro Cys Arg Leu Thr His Thr Trp Gln Thr Asn Arg Ala Leu		
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Gly Leu Pro Pro Phe Leu Asn Ser Leu Pro Gln Ser Glu Gly Ala		
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Val Thr Gln Met Gly Asn Thr Asp Tyr Ile Thr Glu Ala Thr Ile		
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gaa gcg tct aca caa ggg cca ttt aaa ata cct att gca gca gga		1080
Glu Ala Ser Thr Gln Gly Pro Phe Lys Ile Pro Ile Ala Ala Gly		
350	355	360
cgg ggg gga gcg caa aca gat gaa aat caa gca gca gat ggt gat		1125
Arg Gly Gly Ala Gln Thr Asp Glu Asn Gln Ala Ala Asp Gly Asp		
365	370	375
cca aga tat gca ttt ggt aga caa cat ggt caa aaa act act aca		1170
Pro Arg Tyr Ala Phe Gly Arg Gln His Gly Gln Lys Thr Thr Thr		
380	385	390
aca gga gaa aca cct gag aga ttt aca tat ata gca cat caa gat		1215

Thr Gly Glu Thr Pro Glu Arg Phe Thr Tyr Ile Ala His Gln Asp
 395 400 405
 aca gga aga tat cca gca gga gat tgg att caa aat att aac ttt 1260
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 410 415 420
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 440 445 450
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 Tyr Gly Pro Leu Thr Ala Leu Asn Asn Val Pro Pro Val Tyr Pro
 455 460 465
 aat ggt caa att tgg gat aaa gaa ttt gat act gac tta aaa cca 1440
 Asn Gly Gln Ile Trp Asp Lys Glu Phe Asp Thr Asp Leu Lys Pro
 470 475 480
 aga ctt cat gta aat gca cca ttt gtt tgt caa aat aat tgt cct 1485
 Arg Leu His Val Asn Ala Pro Phe Val Cys Gln Asn Asn Cys Pro
 485 490 495
 ggt caa tta ttt gta aaa gtt gcg cct aat tta aca aat gaa tat 1530
 Gly Gln Leu Phe Val Lys Val Ala Pro Asn Leu Thr Asn Glu Tyr
 500 505 510
 gat cct gat gca tct gct aat atg tca aga att gta act tac tca 1575
 Asp Pro Asp Ala Ser Ala Asn Met Ser Arg Ile Val Thr Tyr Ser
 515 520 525
 gat ttt tgg tgg aaa ggt aaa tta gta ttt aaa gct aaa cta aga 1620
 Asp Phe Trp Trp Lys Gly Lys Leu Val Phe Lys Ala Lys Leu Arg
 530 535 540
 gca tct cat act tgg aat cca att caa caa atg agt att aat gta 1665
 Ala Ser His Thr Trp Asn Pro Ile Gln Gln Met Ser Ile Asn Val
 545 550 555
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2009-04-29 09:20:00

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Ile	Val	Tyr	Glu	Lys	Ser	Gln	Leu	Ala	Pro	Arg	Lys	Leu	Tyr		
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aaaattatat	taatatactt	actatgtttt	tatgtttatt	acatattatt											1852
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aggatttaga	aggtttgtta	tatggtatac	aataactgta	agaaatagaa											1952
gaacatttag	atcatggta	gtatggata	caataactgt	aagaaataga											2002
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Pro Leu Cys Phe Gly Lys Phe Pro Ile Tyr Thr Ile Leu Asp			
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Lys Leu Gly Pro Trp Ser Pro Ile Asp Ile His His Leu Ser			
30	35	40	
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Cys Pro Asn Asn Leu Val Val Glu Asp Glu Gly Cys Thr Asn			
45	50	55	
ctg tca ggg ttc tcc tac atg gaa ctt aaa gtt gga tac atc			210
Leu Ser Gly Phe Ser Tyr Met Glu Leu Lys Val Gly Tyr Ile			
60	65	70	
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Leu Ala Ile Lys Met Asn Gly Phe Thr Cys Thr Gly Val Val			
75	80		
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Thr Glu Ala Glu Thr Tyr Thr Asn Phe Val Gly Tyr Val Thr			
85	90	95	
acc acg ttc aaa aga aag cat ttc cgc cca aca cca gat gca			336
Thr Thr Phe Lys Arg Lys His Phe Arg Pro Thr Pro Asp Ala			
100	105	110	
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Cys Arg Ala Ala Tyr Asn Trp Lys Met Ala Gly Asp Pro Arg			
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Tyr Glu Glu Ser Leu His Asn Pro Tyr Pro Asp Tyr Arg Trp			
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Leu Arg Thr Val Lys Thr Lys Glu Ser Leu Val Ile Ile			
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Ser Pro Ser Val Ala Asp Leu Asp Pro Tyr Asp Arg Ser Leu			

DRAFT: 06/07/02

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170	175	180	
gtg tct tct acc tac tgc tcc act aac cac gat tac acc att			588
Val Ser Ser Thr Tyr Cys Ser Thr Asn His Asp Tyr Thr Ile			
185	190	195	
tgg atg ccc gag aat ccg aga cta ggg atg tct tgt gac att			630
Trp Met Pro Glu Asn Pro Arg Leu Gly Met Ser Cys Asp Ile			
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215	220		
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Thr Cys Gly Phe Val Asp Glu Arg Gly Leu Tyr Lys Ser Leu			
225	230	235	
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Lys Gly Ala Cys Lys Leu Lys Leu Cys Gly Val Leu Gly Leu			
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Glu Thr Lys Trp Cys Pro Pro Asp Gln Leu Val Asn Leu His			
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295	300	305	
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310	315	320	

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340	345	350
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Pro Glu Met Gln Ser Ser Leu Leu Gln Gln His Met Glu Leu		
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Leu Glu Ser Ser Val Ile Pro Leu Val His Pro Leu Ala Asp		
410	415	420
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Val Glu Val His Leu Pro Asp Val His Asn Gln Val Ser Gly		
435	440	445
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Val Asp Leu Gly Leu Pro Asn Trp Gly Lys Tyr Val Leu Leu		
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Ser Ala Gly Ala Leu Thr Ala Leu Met Leu Ile Ile Phe Leu		
465	470	475

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490	
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His Asn Leu Arg Gly Thr Gly Arg Glu Val Ser Val Thr Pro	
495	500
caa agc ggg aag atc ata tct tca tgg gaa tca cac aag agt	1554
Gln Ser Gly Lys Ile Ile Ser Ser Trp Glu Ser His Lys Ser	
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Pro His Ile Lys Leu Val Ile Asn Pro Asn Lys Phe Leu His Val
20 25 30

ggc ttc tgc gat aac cct tta atg tgt tat cct gaa tta cta 135
Gly Phe Cys Asp Asn Pro Leu Met Cys Cys Tyr Pro Glu Leu Leu
35 40 45

cct gaa ttt ggc acc atg tgg gat tgt gat caa tcg cca ctc caa 180
Pro Glu Phe Gly Thr Met Trp Asp Cys Asp Gln Ser Pro Leu Gln
50 55 60

gtc tac ctt gag tca atc ctg ggt gat gat gaa tgg tcc tcc act 225
Val Tyr Leu Glu Ser Ile Leu Gly Asp Asp Glu Trp Ser Ser Thr
65 70 75

cat gaa gca att gac cca gtt gtg cca cca atg cat tgg gat gaa 270
His Glu Ala Ile Asp Pro Val Val Pro Pro Met His Trp Asp Glu
80 85 90

gcc gga aaa atc ttc caa cca cac cct ggc gtc ctt atg cat cac 315
Ala Gly Lys Ile Phe Gln Pro His Pro Gly Val Leu Met His His
95 100 105

ctc atc tgt aag gtt gca gaa gga tgg gac cca aac ctg cca ctt 360
Leu Ile Cys Lys Val Ala Glu Gly Trp Asp Pro Asn Leu Pro Leu
110 115 120

ttc cgc ttg gaa gcg gac gat ggt tcc atc acg aca cct gaa cag 405
Phe Arg Leu Glu Ala Asp Asp Gly Ser Ile Thr Thr Pro Glu Gln
125 130 135

gga aca atg gtt ggt gga gtc att gct gag ccc aac gcc caa atg 450
Gly Thr Met Val Gly Gly Val Ile Ala Glu Pro Asn Ala Gln Met
140 145 150

tca acc gca gct gac atg gcc act ggg aaa agt gtg gac tct gag 495
Ser Thr Ala Ala Asp Met Ala Thr Gly Lys Ser Val Asp Ser Glu

DRAFT-060402

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ttg ctc aac ccc tac ctt acc cat ctt gca aag ctg tat gtt gct Leu Leu Asn Pro Tyr Leu Thr His Leu Ala Lys Leu Tyr Val Ala 200	205	210	630
tgg tct ggt tct gtt gat gtt agg ttt tct att tct gga tct ggt Trp Ser Gly Ser Val Asp Val Arg Phe Ser Ile Ser Gly Ser Gly 215	220	225	675
gtc ttt gga ggg aaa tta gct gct att gtt gtg ccg cca gga att Val Phe Gly Gly Lys Leu Ala Ala Ile Val Val Pro Pro Gly Ile 230	235	240	720
gat cct gtt caa agt act tca atg ctg caa tat cct cat gtc ctc Asp Pro Val Gln Ser Thr Ser Met Leu Gln Tyr Pro His Val Leu 245	250	255	765
ttt gat gct cgt caa gtt gaa cct gtt atc ttt tcc att ccc gat Phe Asp Ala Arg Gln Val Glu Pro Val Ile Phe Ser Ile Pro Asp 260	265	270	810
cta aga agc acc tta tat cac ctt atg tct gac act gat acc aca Leu Arg Ser Thr Leu Tyr His Leu Met Ser Asp Thr Asp Thr Thr 275	280	285	855
tcg ttg gta atc atg gtg tac aat gat ctt att aac ccc tat got Ser Leu Val Ile Met Val Tyr Asn Asp Leu Ile Asn Pro Tyr Ala 290	295	300	900
aat gac tca aac tct tcg ggc tgc att gtc act gtg gaa act aaa Asn Asp Ser Asn Ser Ser Gly Cys Ile Val Thr Val Glu Thr Lys 305	310	315	945
ccg ggg cca gat ttc aag ttt cac ctc tta aaa cct cct ggg tct Pro Gly Pro Asp Phe Lys Phe His Leu Leu Lys Pro Pro Gly Ser 320	325	330	990

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Met Leu Thr His Gly Ser Ile Pro Ser Asp Leu Ile Pro Lys Ser		
335	340	345
tct tcg ctt tgg att gga aat cgg ttt tgg tct gac ata acc gat		1080
Ser Ser Leu Trp Ile Gly Asn Arg Phe Trp Ser Asp Ile Thr Asp		
350	355	360
ttt gta att cgg cct ttt gtg ttc cag gca aat cga cac ttt gat		1125
Phe Val Ile Arg Pro Phe Val Phe Gln Ala Asn Arg His Phe Asp		
365	370	375
ttc aac caa gag aca gca ggt tgg agc acc cca agg ttt cgc cca		1170
Phe Asn Gln Glu Thr Ala Gly Trp Ser Thr Pro Arg Phe Arg Pro		
380	385	390
att act atc act atc agt gtt aag gag tca gca aag ctt ggt att		1215
Ile Thr Ile Thr Ile Ser Val Lys Glu Ser Ala Lys Leu Gly Ile		
395	400	405
gga gtg gcc acc gac tac att gtt ccc ggc ata cca gat gga tgg		1260
Gly Val Ala Thr Asp Tyr Ile Val Pro Gly Ile Pro Asp Gly Trp		
410	415	420
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Pro Asp Thr Thr Ile Pro Gly Glu Leu Val Pro Val Gly Asp Tyr		
425	430	435
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440	445	450
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455	460	465
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Met Tyr Ile Cys Gly Ser Leu Gln Arg Ala Trp Gly Asp Lys Lys		
470	475	480
att tca aat act gct ttt atc aca acc ggc acg gtt gat gga gcc		1485
Ile Ser Asn Thr Ala Phe Ile Thr Thr Gly Thr Val Asp Gly Ala		
485	490	495

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Lys Leu Ile Pro Ser Asn Thr Ile Asp Gln Thr Lys Ile Ala Val				
ttc caa gac aca cat gcg aat aag cat gtc cag acc tcg gac gac	515	520	525	1575
Phe Gln Asp Thr His Ala Asn Lys His Val Gln Thr Ser Asp Asp				
aca ttg gcc ctg ctt ggt tat act ggt att ggt gag gaa gca att	530	535	540	1620
Thr Leu Ala Leu Leu Gly Tyr Thr Gly Ile Gly Glu Glu Ala Ile				
ggt gct gac cgc gat aga gtt gtg cga att agc gtc ctc ccg gaa	545	550	555	1665
Gly Ala Asp Arg Asp Arg Val Val Arg Ile Ser Val Leu Pro Glu				
cgt ggc gca cgt ggt ggc aat cac cca atc ttc cac aaa aac tct	560	565	570	1710
Arg Gly Ala Arg Gly Gly Asn His Pro Ile Phe His Lys Asn Ser				
atc aag ctt ggt tat gta att agg tcc att gat gtg ttc aat tct	575	580	585	1755
Ile Lys Leu Gly Tyr Val Ile Arg Ser Ile Asp Val Phe Asn Ser				
caa att ctg cat acc tct agg caa ctt tcc ctc aat cat tac tta	590	595	600	1800
Gln Ile Leu His Thr Ser Arg Gln Leu Ser Leu Asn His Tyr Leu				
ttg tcg cct gac tcc ttt gct gtc tat agg att att gac tct aat	605	610	615	1845
Leu Ser Pro Asp Ser Phe Ala Val Tyr Arg Ile Ile Asp Ser Asn				
gga tcc tgg ttt gac ata ggc att gat aat gat gga ttt tct ttt	620	625	630	1890
Gly Ser Trp Phe Asp Ile Gly Ile Asp Asn Asp Gly Phe Ser Phe				
gtt ggt gta tca agt att ggt aaa tta gag ttt cct tta act gcc	635	640	645	1935
Val Gly Val Ser Ser Ile Gly Lys Leu Glu Phe Pro Leu Thr Ala				
tcc tac atg gga att caa ttg gca aaa att cga ctt gcc tct aac	650	655	660	1980
Ser Tyr Met Gly Ile Gln Leu Ala Lys Ile Arg Leu Ala Ser Asn				
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Ile Arg Ser Val Met Thr Lys Leu
665

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<211> 582

<212> DNA

<213> artificial sequence

<220> hemagglutinin left arm

<223>

<400> 1

attaaacgca aatatccatg	gaaaacgcgc	agtatacaga	cgattttta	50
cagtatttgg	agagtttat	aggaagtata	tagagtagaa	100
gtaaaaataa	atcacattt	tatactaata	tgaaacaact	150
atattgctac	tatcgatagt	atatacaacc	aaacctcatc	200
atcaaaaaaa	ctaggcgatg	atgctactct	atcgtgtaat	250
cacatggata	tcttgcatg	agttcttgg	ataagaaacc	300
attctcttag	cagccaaaaa	cgatgtcgta	tactttgatg	350
ggataaaagta	tcatacgatt	caccgtatga	tactctagct	400
caattaaatc	attgacatct	gcagatgcag	gtacttatat	450
tttataacat	caacaaatga	tacggataaa	atagattatg	500
catagatttgc	gttgtaaatc	cagctaattgt	atccactatt	550
tatcaggatc	taatttctcc	gtgataggta	tc	582

<210> 9

<211> 447

<212> DNA

<213> artificial sequence

<220> hemagglutinin right arm

<223>

<400> 1

ctctagcgcc	taaccccagg	cgaccgacga	caacctttat	gatacatata	50
atgaaccaat	atctgtatca	tcctcgatac	caacaacggt	agaaaagtgtt	100
acaatatcta	ctacaaaata	tacaactagt	gactttatag	agatatttgg	150

cattgtttca	ctaattttat	tattggccgt	ggcgattttc	tgtattat	200
tatttctgta	gtggacggtc	tcgtaaacaa	gaaacaaata	tattatagat	250
ttaaactcag	ataaaatgtct	ggaataatta	aatctatcgt	tttgagcgga	300
ccatctgggtt	ccggcaagac	agctatagtc	aggagactct	tacaagatta	350
tggaaatata	tttggatttg	tggtatccca	taccactaga	tttcctcgtc	400
ctatggaacg	agaagggtgtc	gactaccatt	acgttaaacag	agaggcc	447

<210> 10

<211> 40

<212> DNA

<213> artificial sequence

<220> primer P3

<223>

<400> 1

gatacctatc acggagaaat tagatcctga tagaatcgcg 40

<210> 11

<211> 22

<212> DNA

<213> artificial sequence

<220> primer P1

<223>

<400> 1

1000

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<213> artificial sequence
<220> primer F2
<223>
<400> 1
gcggtaaccct ggggttaggc gatagag 27

<210> 13

<211> 20

<212> DNA

<213> artificial sequence

<220> primer P5

<223>

<400> 1
atttctccgt gataggtatc 20

<210> 14

<211> 22

<212> DNA

<213> artificial sequence

<220> primer P5

<223>

<400> 1
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<210> 15

<211> 22

卷之三

<212> DNA

<213> artificial sequence

<220> primer P2

<223>

<400> 1

qcgtcqaagt ttgagcatgt gc 22

<210> 16

<211> 40

<212> DNA

<213> artificial sequence

<220> primer P4

<223>

<400> 1

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<211> 840

<212> DNA

<213> feline infectious peritonitis virus

<220>

223>

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51

atg aag tac att ttg cta ata ctc qcq tgc ata att qca tgc gtt 96

Met Lys Tyr Ile Leu Leu Ile Leu Ala Cys Ile Ile Ala Cys Val
 1 5 10 15
 tat ggt gaa cgc tac tgt gcc atg caa gac agt ggc ttg cag tgt 141
 Tyr Gly Glu Arg Tyr Cys Ala Met Gln Asp Ser Gly Leu Gln Cys
 20 25 30
 att aat ggc aca aat tca aga tgt caa acc tgc ttt gaa cgt ggt 186
 Ile Gln Gly Thr Gln Ser Arg Cys Gln Thr Cys Phe Glu Arg Gly
 35 40 45
 gat ctt att tgg cat ctt gct aac tgg aac ttc agc tgg tct gta 231
 Asp Leu Ile Trp His Leu Ala Asn Trp Asn Phe Ser Trp Ser Val
 50 55 60
 ata ttg att gtt ttt ata aca gtg tta caa tat ggc aga cca caa 276
 Ile Leu Ile Val Phe Ile Thr Val Leu Gln Tyr Gly Arg Pro Gln
 65 70 75
 ttt agc tgg ctc gtt tat ggc att aaa atg ctg atc atg tgg cta 321
 Phe Ser Trp Leu Val Tyr Gly Ile Lys Met Leu Ile Met Trp Leu
 80 85 90
 tta tgg cct att gtt cta gcg ctt acg att ttt aat gca tac tct 366
 Leu Trp Pro Ile Val Leu Ala Leu Thr Ile Phe Asn Ala Tyr Ser
 95 100 105
 gag tac caa gtt tcc aga tat gta atg ttc ggc ttt agt gtt gca 411
 Glu Tyr Gln Val Ser Arg Tyr Val Met Phe Gly Phe Ser Val Ala
 110 115 120
 ggt gca gtt gta acg ttt gca ctt tgg atg atg tat ttt gtg aga 456
 Gly Ala Val Val Thr Phe Ala Leu Trp Met Met Tyr Phe Val Arg
 125 130 135
 tct gtt cag cta tat aga aga acc aaa tca tgg tgg tct ttt aat 501
 Ser Val Gln Leu Tyr Arg Axa Thr Lys Ser Trp Trp Ser Phe Asn
 140 145 150
 cct gag act aat gca att ctt tgt gtt aat gca ttg ggt aga agt 546
 Pro Glu Thr Asn Ala Ile Leu Cys Val Asn Ala Leu Gly Arg Ser
 155 160 165
 tat gtg ctt ccc tta gat ggt act cct aca ggt gtt acc ctt act 591
 Tyr Val Leu Pro Leu Asp Gly Thr Pro Thr Gly Val Thr Leu Thr

170	175	180	
ctt ctt tca gga aat cta tat gct gaa ggt ttc aaa atg gct ggt			636
Leu Leu Ser Gly Asn Leu Tyr Ala Glu Gly Phe Lys Met Ala Gly			
185	190	195	
ggt tta acc atc gag cat ttg cct aaa tac gtc atg att gct aca			681
Gly Leu Thr Ile Glu His Leu Pro Lys Tyr Val Met Ile Ala Thr			
200	205	210	
cct agt aga acc atc gtt tat aca tta gtt gga aaa caa tta aaa			726
Pro Ser Arg Thr Ile Val Tyr Thr Ile Val Gly Lys Gln Leu Lys			
215	220	225	
gca act act gcc aca gga tgg gct tac tac gta aaa tct aaa gct			771
Ala Thr Thr Ala Thr Gly Trp Ala Tyr Tyr Val Lys Ser Lys Ala			
230	235	240	
ggt gat tac tca aca gaa gca cgt act gac aat ttg agt gaa cat			816
Gly Asp Tyr Ser Thr Glu Ala Arg Thr Asp Asn Leu Ser Glu His			
245	250	255	
gaa aaa tta tta cat atg gtg taa	840		
Glu Lys Leu Leu His Met Val			
260			
<210> 18			
<211> 1144			
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<213> feline infectious peritonitis virus			
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Met Ala Thr Gln Gly Gln Arg Val Asn Trp Gly Asp Glu Pro Ser			
1	5	10	15
aaa aga cgt ggt cgt tct aac tct cgt ggt cgg aag aat aat gat			90
Lys Arg Arg Gly Arg Ser Asn Ser Arg Gly Arg Lys Asn Asn Asp			

20	25	30
ata cct ttg tca ttc tac aac ccc att acc ctc gaa caa gga tct		135
Ile Pro Leu Ser Phe Tyr Asn Phe Ile Thr Leu Glu Gln Glu Ser		
35	40	45
aaa ttt tgg aat tta tgt ccg aga gac ctt gtt ccc aaa gga ata		180
Lys Phe Trp Asn Leu Cys Pro Arg Asp Leu Val Pro Lys Gly Ile		
50	55	60
ggt aat aag gat caa caa att ggt tat tgg aat aga cag att cgt		225
Gly Asn Lys Asp Gln Gln Ile Gly Tyr Trp Asn Arg Gln Ile Arg		
65	70	75
tat cgt att gta aaa ggc cag cgt aag gaa ctc gct gag agg tgg		270
Tyr Arg Ile Val Lys Gly Gln Arg Lys Glu Leu Ala Glu Arg Trp		
80	85	90
ttc ttt tac ttc tta ggt aca gga cct cat gct gat gct aaa ttc		315
Phe Phe Tyr Phe Leu Gly Thr Gly Phe His Ala Asp Ala Lys Phe		
95	100	105
aaa gac aag att gat gga gtc ttc tgg gtt gca agg gat ggt gcc		360
Lys Asp Lys Ile Asp Gly Val Phe Trp Val Ala Arg Asp Gly Ala		
110	115	120
atg aac aag ccc aca acg ctt ggc act cgt gga acc aat aac gaa		405
Met Asn Lys Pro Thr Thr Leu Gly Thr Arg Gly Thr Asn Asn Glu		
125	130	135
tcc aaa cca ctg aga ttt gat ggt aag ata ccg cca cag ttt cag		450
Ser Lys Pro Leu Arg Phe Asp Gly Lys Ile Pro Pro Gln Phe Gln		
140	145	150
ctt gaa gtg aac cgt tct agg aac aat tca agg tct ggt tct cag		495
Leu Glu Val Asn Arg Ser Arg Asn Asn Ser Arg Ser Gly Ser Gln		
155	160	165
tct aga tct gtt tca aga aac aga tct caa tct aga gga aga cac		540
Ser Arg Ser Val Ser Arg Asn Arg Ser Gln Ser Arg Gly Arg His		
170	175	180
cat tcc aat aac cag aat aat gtt gag gat aca att gta gcc		585
His Ser Asn Asn Gln Asn Asn Asn Val Glu Asp Thr Ile Val Ala		
185	190	195

gtg ctt gaa aaa tta ggt gtt act gac aaa caa agg tca cgt tct 630
 Val Leu Glu Lys Leu Gly Val Thr Asp Lys Gln Arg Ser Arg Ser
 200 205 210

aaa cct aga gaa cgt agt gat tcc aaa cct agg gac aca aca cct 675
 Lys Pro Arg Glu Arg Ser Asp Ser Lys Pro Arg Asp Thr Thr Pro
 215 220 225

aag aat gcc aac aaa cac acc tgg aag aaa act gca ggc aag gga 720
 Lys Asn Ala Asn Lys His Thr Trp Lys Lys Thr Ala Gly Lys Gly
 230 235 240

gat gtg aca act ttc tat ggt gct aga agt agt tca gct aac ttt 765
 Asp Val Thr Thr Phe Tyr Gly Ala Arg Ser Ser Ser Ala Asn Phe
 245 250 255

ggt gat agt gat ctc gtt gcc aat ggt aac gct gcc aaa tgc tac 810
 Gly Asp Ser Asp Leu Val Ala Asn Gly Asn Ala Ala Lys Cys Tyr
 260 265 270

cct cag ata gct gaa tgt gtt cca tca gtg tct agc ata atc ttt 855
 Pro Gln Ile Ala Glu Cys Val Pro Ser Val Ser Ser Ile Ile Phe
 275 280 285

ggc agt caa tgg tct gct gaa gaa gct ggt gat caa gtg aaa gtc 900
 Gly Ser Gln Trp Ser Ala Glu Glu Ala Gly Asp Gln Val Lys Val
 290 295 300

acg ctc act cac acc tac tac ctg cca aag gat gat gcc aaa act 945
 Thr Leu Thr His Thr Tyr Tyr Leu Pro Lys Asp Asp Ala Lys Thr
 305 310 315

agt caa ttc cta gaa cag att gac gct tac aag cga cct tct gaa 990
 Ser Gln Phe Leu Glu Gln Ile Asp Ala Tyr Lys Atg Pro Ser Glu
 320 325 330

gtg gct aag gat cag agg caa aga aga tcc cgt tct aag tct gct 1035
 Val Ala Lys Asp Gln Arg Gln Arg Arg Ser Arg Ser Lys Ser Ala
 335 340 345

gat aag aag cct gag gag ttg tct gta act ctt gtg gag gca tac 1080
 Asp Lys Lys Pro Glu Glu Lys Ser Val Thr Leu Val Glu Ala Tyr
 350 355 360

aca gat gtg ttt gat gac aca cag gtt gag atg att gat gag gtt 1125

Thr Asp Val Phe Asp Asp Thr Gln Val Glu Met Ile Asp Glu Val
365 370 375

acg aac taa acgcattgctc 1144
Thr Asn
377

<210> 19

<211> 1979

<212> DNA

<213> feline leukemia virus

<220>

<223>

<400> 1

accaccaatc aagacaccttc ggacagcccc agctcjjigacg atccatcaag 50

atg gaa agt cca acg cac cca aaa ccc tct aaa gat aag act ctc 95
Met Glu Ser Pro Thr His Pro Lys Pro Ser Lys Asp Lys Thr Leu
1 5 10 15

tcg tgg aac tta gcg ttt ctg gtg ggg atc tta ttt aca ata gac 140
Ser Trp Asn Leu Ala Phe Leu Val Gly Ile Leu Phe Thr Ile Asp
20 25 30

ata gga atg gcc aat cct agt cca cac caa ata tat aat gta act 185
Ile Gly Met Ala Asn Pro Ser Pro His Gln Ile Tyr Asn Val Thr
35 40 45

tgg gta ata acc aat gta caa act aac acc caa gct aac gcc acc 230
Trp Val Ile Thr Asn Val Gln Thr Asn Thr Gln Ala Asn Ala Thr
50 55 60

tct atg tta gga acc tta acc gat gcc tac cct acc cta cat gtt 275
Ser Met Leu Gly Thr Leu Thr Asp Ala Tyr Pro Thr Leu His Val
65 70 75

gac tta tgt gac cta gtg gga gac acc tgg gaa cct ata gtc cta 320
Asp Leu Cys Asp Leu Val Gly Asp Thr Trp Glu Pro Ile Val Leu

	80	85	90
aac cca acc aat gta aaa cac ggg gca cgt tac tcc tcc tca aaa			365
Asn Pro Thr Asn'Val Lys His Gly Ala Arg Tyr Ser Ser Ser Lys			
95	100	105	
tat gga tgt aaa act aca gat aga aaa aaa cag caa cag aca tac			410
Tyr Gly Cys Lys Thr Thr Asp Arg Lys Lys Gln Gln Gln Thr Tyr			
110	115	120	
ccc ttt tac gtc tgc ccc gga cat gcc ccc tcg ttg ggg cca aag			455
Pro Phe Tyr Val Cys Pro Gly His Ala Pro Ser Leu Gly Pro Lys			
125	130	135	
gga aca cat tgt gga ggg gca caa gat ggg ttt tgt gcc gca tgg			500
Gly Thr His Cys Gly Gly Ala Gln Asp Gly Phe Cys Ala Ala Trp			
140	145	150	
gga tgt gag acc acc gga gaa gct tgg tgg aag ccc acc tcc tca			545
Gly Cys Glu Thr Thr Gly Glu Thr Trp Trp Lys Pro Thr Ser Ser			
155	160	165	
tgg gac tat atc aca gta aaa aga ggg agt agt cag gac aat agc			590
Trp Asp Tyr Ile Thr Val Lys Arg Gly Ser Ser Gln Asp Asn Ser			
170	175	180	
tgt gag gga aaa tgc aac ccc ctg gtt ttg cag ttc acc cag aag			635
Cys Glu Gly Lys Cys Asn Pro Leu Val Leu Gln Phe Thr Gln Lys			
185	190	195	
gga aga caa gcc tct tgg gac gga cct aag atg tgg gga ttg cga			680
Gly Arg Gln Ala Ser Trp Asp Gly Pro Lys Met Trp Gly Leu Arg			
200	205	210	
cta tac cgt aca gga tat gac cct atc gct tta ttc acg gtg tcc			725
Leu Tyr Arg Thr Gly Tyr Asp Pro Ile Ala Leu Phe Thr Val Ser			
215	220	225	
cgg cag gta tca acc att acg ccg cct cag gca atg gga cca aac			770
Arg Gln Val Ser Thr Ile Thr Pro Pro Gln Ala Met Gly Pro Asn			
230	235	240	
cta gtc tta cct gat caa aaa ccc cca tcc cga caa tct caa aca			815
Leu Val Leu Pro Asp Gln Lys Pro Pro Ser Arg Gln Ser Gln Thr			

DNA sequence

245	250	255
ggg tcc aaa gtg gcg acc cag agg ccc caa acg aat gaa agc gcc	860	
Gly Ser Lys Val Ala Thr Gln Arg Pro Gln Thr Asn Glu Ser Ala		
260	265	270
cca agg tct gtt gcc ccc acc acc atg ggt ccc aaa cgg att ggg	905	
Pro Arg Ser Val Ala Pro Thr Thr Met Gly Pro Lys Arg Ile Gly		
275	280	285
acc gga gat agg tta ata aat tta gta caa ggg aca tac cta gcc	950	
Thr Gly Asp Arg Leu Ile Asn Leu Val Gln Gly Thr Tyr Leu Ala		
290	295	300
tta aat gcc acc gac ccc aac aaa act aaa gac tgt tgg ctc tgc	995	
Leu Asn Ala Thr Asp Pro Asn Lys Thr Lys Asp Cys Trp Leu Cys		
305	310	315
ctg gtt tct cga cca ccc tat tac gaa ggg att gca atc tta ggt	1040	
Leu Val Ser Arg Pro Pro Tyr Tyr Glu Gly Ile Ala Ile Leu Gly		
320	325	330
acc tac agc aac caa aca aac ccc cca tcc tgc cta tct act	1085	
Asn Tyr Ser Asn Gln Thr Asn Pro Pro Ser Cys Leu Ser Ile		
335	340	345
ccg caa cac aaa cta act ata tct gaa gta tca ggg caa gga atg	1130	
Pro Gln His Lys Leu Thr Ile Ser Glu Val Ser Gly Gln Gly Met		
350	355	360
tgc ata ggg act gtt cct aaa acc cac cag gct ttg tgc aat aag	1175	
Cys Ile Gly Thr Val Pro Lys Thr His Gln Ala Leu Cys Asn Lys		
365	370	375
aca caa cag gga cat aca ggg gcg cac tat cta gcc gcc ccc aac	1220	
Thr Gln Gln Gly His Thr Gly Ala His Tyr Leu Ala Ala Pro Asn		
380	385	390
ggc acc tat tgg gcc tgt aac act gga ctc acc cca tgc att tcc	1265	
Gly Thr Tyr Trp Ala Cys Asn Thr Gly Leu Thr Pro Cys Ile Ser		
395	400	405

atg gcg gtg ctc aat tgg acc tct gat ttt tgt gtc tta atc gaa 1310
Met Ala Val Leu Asn Trp Thr Ser Asp Phe Cys Val Leu Ile Glu
410 415 420

tta tgg ccc aga gtg act tac cat caa ccc gaa tat gtg tac aca 1355
Leu Trp Pro Arg Val Thr Tyr His Gln Pro Glu Tyr Val Tyr Thr
425 430 435

cat ttt gcc aaa gct gtc agg ttc cga aga gaa cca ata tca cta 1400
His Phe Ala Lys Ala Val Arg Phe Arg Axx Glu Pro Ile Ser Leu
440 445 450

acg gtt gcc ctt atg ttg gga gga ctt act gta ggg ggc ata gcc 1445
Thr Val Ala Leu Met Leu Gly Gly Leu Thr Val Gly Gly Ile Ala
455 460 465

gcg ggg gtc gga aca ggg act aaa gcc ctc ctt gaa aca gcc cag 1490
Ala Gly Val Gly Thr Gly Thr Lys Ala Leu Leu Glu Thr Ala Gln
470 475 480

ttc aga caa cta caa atg gcc atg cac aca gac atc cag gcc cta 1535
Phe Arg Gln Leu Gln Met Ala Met His Thr Asp Ile Gln Ala Leu
485 490 495

gaa gaa tca att agt gcc tta gaa aag tcc ctg acc tcc ctt tct 1580
Glu Glu Ser Ile Ser Ala Leu Glu Lys Ser Leu Thr Ser Leu Ser
500 505 510

gaa gta gtc tta caa aac aga cgg ggc cta gat att cta ttc tta 1625
Glu Val Val Leu Gln Asn Arg Arg Glu Leu Asp Ile Leu Phe Leu
515 520 525

caa gag gga ggg ctc tgt gcc gca ttg aaa gaa gaa tgt tgc ttc 1670
Gln Glu Gly Gly Leu Cys Ala Ala Leu Lys Glu Glu Cys Cys Phe
530 535 540

tat gcg gat cac acc gga ctc gtc cga gac aat atg gcc aaa tta 1715
Tyr Ala Asp His Thr Gly Leu Val Arg Asp Asn Met Ala Lys Leu
545 550 555

aga gaa aga cta aaa cag cgg caa caa ctg ttt gac tcc caa cag 1760
Arg Glu Arg Leu Lys Gln Arg Gln Gln Leu Phe Asp Ser Gln Gln
560 565 570

gga tgg ttt gaa gga tgg ttc aac aag tcc ccc tgg ttt aca acc 1805
Gly Trp Phe Glu Gly Trp Phe Asn Lys Ser Pro Trp Phe Thr Thr
575 580 585

cta att tcc tcc att atg ggc ccc tta cta atc cta ctc cta att 1850
Leu Ile Ser Ser Ile Met Gly Pro Leu Leu Ile Leu Leu Ile
590 595 600

ctc ctc ttc ggc cca tgc atc ctt aac cga tta gta caa ttc gta
1895 Leu Leu Phe Gly Pro Cys Ile Leu Asn Arg Leu Val Gln Phe
Val

605 610 615

aaa gac aga ata tct gtg gta cag gct tta att tta acc caa cag
1940 Lys Asp Arg Ile Ser Val Val Gln Ala Leu Ile Leu Thr Gln
Gln

620 625 630

tac caa cag ata aag caa tac gat ccg gac cga cca tga 1979
Tyr Gln Gln Ile Lys Gln Tyr Asp Pro Asp Arg Pro
635 640

<210> 20

<211> 584

<212> PRT

<213> feline panleukopenia peritonitis virus

<220>

<223>

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Arg Asn Glu Arg Ala Thr Gly Ser Gly Asn Gly Ser Gly Gly
20 25 30

Gly Gly Gly Ser Gly Gly Val Gly Ile Ser Thr Gly Thr Phe
35 40 45

09873881-11-060401

Asn Asn Gln Thr Glu Phe Lys Phe Leu Glu Asn Gly Trp Val Glu
 50 55 60

Ile Thr Ala Asn Ser Ser Arg Leu Val His Leu Asn Met Pro Glu
 65 70 75

Ser Glu Asn Tyr Lys Arg Val Val Val Asn Asn Met Asp Lys Thr
 80 85 90

Ala Val Lys Gly Asn Met Ala Leu Asp Asp Thr His Val Gln Ile
 95 100 105

Val Thr Pro Trp Ser Leu Val Asp Ala Asn Ala Trp Gly Val Trp
 110 115 120

Phe Asn Pro Gly Asp Trp Gln Leu Ile Val Asn Thr Met Ser Glu
 125 130 135

Leu His Leu Val Ser Phe Glu Gln Glu Ile Phe Asn Val Val Leu
 140 145 150

Lys Thr Val Ser Glu Ser Ala Thr Gln Pro Pro Thr Lys Val Tyr
 155 160 165

Asn Asn Asp Leu Thr Ala Ser Leu Met Val Ala Leu Asp Ser Asn
 170 175 180

Asn Thr Met Pro Phe Thr Pro Ala Ala Met Arg Ser Glu Thr Leu
 185 190 195

Gly Phe Tyr Pro Trp Lys Pro Thr Ile Pro Thr Pro Trp Arg Tyr
 200 205 210

Tyr Phe Gln Trp Asp Arg Thr Leu Ile Pro Ser His Thr Gly Thr
 215 220 225

Ser Gly Thr Pro Thr Asn Ile Tyr His Gly Thr Asp Pro Asp Asp
 230 235 240

Val Gln Phe Tyr Thr Ile Glu Asn Ser Val Pro Val His Leu Leu
 245 250 255

Arg Thr Gly Asp Glu Phe Ala Thr Gly Thr Phe Phe Asp Cys
 260 265 270

Lys Pro Cys Arg Leu Thr His Thr Trp Gln Thr Asn Arg Ala Leu
 275 280 285

Gly Leu Pro Pro Phe Leu Asn Ser Leu Pro Gln Ser Glu Gly Ala
 290 295 300

Thr Asn Phe Gly Asp Ile Gly Val Gln Gln Asp Lys Arg Arg Gly
 305 310 315

Val Thr Gln Met Gly Asn Thr Asp Tyr Ile Thr Glu Ala Thr Ile
 320 325 330

Met Arg Pro Ala Glu Val Gly Tyr Ser Ala Pro Tyr Tyr Ser Phe
 335 340 345

Glu Ala Ser Thr Gln Gly Pro Phe Lys Ile Pro Ile Ala Ala Gly
 350 355 360

Arg Gly Gly Ala Gln Thr Asp Glu Asn Gln Ala Ala Asp Gly Asp
 365 370 375

Pro Arg Tyr Ala Phe Gly Arg Gln His Gly Gln Lys Thr Thr Thr
 380 385 390

Thr Gly Glu Thr Pro Glu Arg Phe Thr Tyr Ile Ala His Gln Asp
 395 400 405

Thr Gly Arg Tyr Pro Ala Gly Asp Trp Ile Gln Asn Ile Asn Phe
 410 415 420

Asn Leu Pro Val Thr Asn Asp Asn Val Leu Leu Pro Thr Asp Pro
 425 430 435

Ile Gly Gly Lys Thr Gly Ile Asn Tyr Thr Asn Ile Phe Asn Thr
 440 445 450

Tyr Gly Pro Leu Thr Ala Leu Asn Asn Val Pro Pro Val Tyr Pro
 455 460 465

Asn Gly Gln Ile Trp Asp Lys Glu Phe Asp Thr Asp Leu Lys Pro
 470 475 480

Arg Leu His Val Asn Ala Pro Phe Val Cys Gln Asn Asn Cys Pro
485 490 495

Gly Gln Leu Phe Val Lys Val Ala Pro Asn Leu Thr Asn Glu Tyr
500 505 510

Asp Pro Asp Ala Ser Ala Asn Met Ser Arg Ile Val Thr Tyr Ser
515 520 525

Asp Phe Trp Trp Lys Gly Lys Leu Val Phe Lys Ala Lys Leu Arg
530 535 540

Ala Ser His Thr Trp Asn Pro Ile Gln Gln Met Ser Ile Asn Val
545 550 555

Asp Asn Gln Phe Asn Tyr Leu Pro Asn Asn Ile Gly Ala Met Lys
560 565 570

Ile Val Tyr Glu Lys Ser Gln Leu Ala Pro Arg Lys Leu Tyr
575 580

<210> 21

<211> 524

<212> PRT

<213> rabies virus

<220>

<223>

<400> 1

Met Val Pro Gln Ala Leu Leu Phe Val Pro Leu Leu Val Phe
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15 20 25

Lys Leu Gly Pro Trp Ser Pro Ile Asp Ile His His Leu Ser
30 35 40

Cys Pro Asn Asn Leu Val Val Glu Asp Glu Gly Cys Thr Asn
 45 50 55

 Leu Ser Gly Phe Ser Tyr Met Glu Leu Lys Val Gly Tyr Ile
 60 65 70

 Leu Ala Ile Lys Met Asn Gly Phe Thr Cys Thr Gly Val Val
 75 80

 Thr Glu Ala Glu Thr Tyr Thr Asn Phe Val Gly Tyr Val Thr
 85 90 95

 Thr Thr Phe Lys Arg Lys His Phe Arg Pro Thr Pro Asp Ala
 100 105 110

 Cys Arg Ala Ala Tyr Asn Trp Lys Met Ala Gly Asp Pro Arg
 115 120 125

 Tyr Glu Glu Ser Leu His Asn Pro Tyr Pro Asp Tyr Arg Trp
 130 135 140

 Leu Arg Thr Val Lys Thr Thr Lys Glu Ser Leu Val Ile Ile
 145 150

 Ser Pro Ser Val Ala Asp Leu Asp Pro Tyr Asp Arg Ser Leu
 155 160 165

 His Ser Arg Val Phe Pro Ser Gly Lys Cys Ser Gly Val Ala
 170 175 180

 Val Ser Ser Thr Tyr Cys Ser Thr Asn His Asp Tyr Thr Ile
 185 190 195

 Trp Met Pro Glu Asn Pro Arg Leu Gly Met Ser Cys Asp Ile
 200 205 210

 Phe Thr Asn Ser Arg Gly Lys Arg Ala Ser Lys Gly Ser Glu
 215 220

 Thr Cys Gly Phe Val Asp Glu Arg Gly Leu Tyr Lys Ser Leu
 225 230 235

 Lys Gly Ala Cys Lys Leu Lys Leu Cys Gly Val Leu Gly Leu
 240 245 250

Arg Leu Met Asp Gly Thr Trp Val Ala Met Gln Thr Ser Asn
255 260 265

Glu Thr Lys Trp Cys Pro Pro Asp Gln Leu Val Asn Leu His
270 275 280

Asp Phe Arg Ser Asp Glu Ile Glu His Leu Val Val Glu Glu
285 290

Leu Val Arg Lys Arg Glu Glu Cys Leu Asp Ala Leu Glu Ser
295 300 305

Ile Met Thr Thr Lys Ser Val Ser Phe Arg Arg Leu Ser His
310 315 320

Leu Arg Lys Leu Val Pro Gly Phe Gly Lys Ala Tyr Thr Ile
325 330 335

Phe Asn Lys Thr Leu Met Glu Ala Asp Ala His Tyr Lys Ser
340 345 350

Val Arg Thr Trp Asn Glu Ile Leu Pro Ser Lys Gly Cys Leu
355 360

Arg Val Gly Gly Arg Cys His Pro His Val Asn Gly Val Phe
365 370 375

Phe Asn Gly Ile Ile Leu Gly Pro Asp Gly Asn Val Leu Ile
380 385 390

Pro Glu Met Gln Ser Ser Leu Leu Gln Gln His Met Glu Leu
395 400 405

Leu Glu Ser Ser Val Ile Pro Leu Val His Pro Leu Ala Asp
410 415 420

Pro Ser Thr Val Phe Lys Asp Gly Asp Glu Ala Glu Asp Phe
425 430

Val Glu Val His Leu Pro Asp Val His Asn Gln Val Ser Gly
435 440 445

Val Asp Leu Gly Leu Pro Asn Trp Gly Lys Tyr Val Leu Leu
450 455 460

Ser Ala Gly Ala Leu Thr Ala Leu Met Leu Ile Ile Phe Leu
465 470 475

Met Thr Cys Cys Arg Arg Val Asn Arg Ser Glu Pro Thr Gln
480 485 490

His Asn Leu Arg Gly Thr Gly Arg Glu Val Ser Val Thr Pro
495 500

Gln Ser Gly Lys Ile Ile Ser Ser Trp Glu Ser His Lys Ser
505 510 515

Gly Gly Glu Thr Arg Leu
520 524

<210> 22

<211> 668

<212> PRT

<213> feline calicivirus

<220>

<223>

<400> 1

Met Cys Ser Thr Cys Ala Asn Val Leu Lys Tyr Tyr Asp Trp Asp
1 5 10 15

Pro His Ile Lys Leu Val Ile Asn Pro Asn Lys Phe Leu His Val
20 25 30

Gly Phe Cys Asp Asn Pro Leu Met Cys Cys Tyr Pro Glu Leu Leu
35 40 45

Pro Glu Phe Gly Thr Met Trp Asp Cys Asp Gln Ser Pro Leu Gln
50 55 60

Val Tyr Leu Glu Ser Ile Leu Gly Asp Asp Glu Trp Ser Ser Thr
65 70 75

His	Glu	Ala	Ile	Asp	Pro	Val	Val	Pro	Pro	Met	His	Trp	Asp	Glu
					80					85				90
Ala	Gly	Lys	Ile	Phe	Gln	Pro	His	Pro	Gly	Val	Leu	Met	His	His
					95					100				105
Leu	Ile	Cys	Lys	Val	Ala	Glu	Gly	Trp	Asp	Pro	Asn	Leu	Pro	Leu
					110					115				120
Phe	Arg	Leu	Glu	Ala	Asp	Asp	Gly	Ser	Ile	Thr	Thr	Pro	Glu	Gln
					125					130				135
Gly	Thr	Met	Val	Gly	Gly	Val	Ile	Ala	Glu	Pro	Asn	Ala	Gln	Met
					140					145				150
Ser	Thr	Ala	Ala	Asp	Met	Ala	Thr	Gly	Lys	Ser	Val	Asp	Ser	Glu
					155					160				165
Trp	Glu	Ala	Phe	Phe	Ser	Phe	His	Thr	Ser	Val	Asn	Trp	Ser	Thr
					170					175				180
Ser	Glu	Thr	Gln	Gly	Lys	Ile	Leu	Phe	Lys	Gln	Ser	Leu	Gly	Pro
					185					190				195
Leu	Leu	Asn	Pro	Tyr	Leu	Thr	His	Leu	Ala	Lys	Leu	Tyr	Val	Ala
					200					205				210
Trp	Ser	Gly	Ser	Val	Asp	Val	Arg	Phe	Ser	Ile	Ser	Gly	Ser	Gly
					215					220				225
Val	Phe	Gly	Gly	Lys	Leu	Ala	Ala	Ile	Val	Val	Pro	Pro	Gly	Ile
					230					235				240
Asp	Pro	Val	Gln	Ser	Thr	Ser	Met	Leu	Gln	Tyr	Pro	His	Val	Leu
					245					250				255
Phe	Asp	Ala	Arg	Gln	Val	Glu	Pro	Val	Ile	Phe	Ser	Ile	Pro	Asp
					260					265				270
Leu	Arg	Ser	Thr	Leu	Tyr	His	Leu	Met	Ser	Asp	Thr	Asp	Thr	Thr
					275					280				285
Ser	Leu	Val	Ile	Met	Val	Tyr	Asn	Asp	Leu	Ile	Asn	Pro	Tyr	Ala
					290					295				300

Asn Asp Ser Asn Ser Ser Gly Cys Ile Val Thr Val Glu Thr Lys
 305 310 315
 Pro Gly Pro Asp Phe Lys Phe His Leu Leu Lys Pro Pro Gly Ser
 320 325 330
 Met Leu Thr His Gly Ser Ile Pro Ser Asp Leu Ile Pro Lys Ser
 335 340 345
 Ser Ser Leu Trp Ile Gly Asn Arg Phe Trp Ser Asp Ile Thr Asp
 350 355 360
 Phe Val Ile Arg Pro Phe Val Phe Gln Ala Asn Arg His Phe Asp
 365 370 375
 Phe Asn Gln Glu Thr Ala Gly Trp Ser Thr Pro Arg Phe Arg Pro
 380 385 390
 Ile Thr Ile Thr Ile Ser Val Lys Glu Ser Ala Lys Leu Gly Ile
 395 400 405
 Gly Val Ala Thr Asp Tyr Ile Val Pro Gly Ile Pro Asp Gly Trp
 410 415 420
 Pro Asp Thr Thr Ile Pro Gly Glu Leu Val Pro Val Gly Asp Tyr
 425 430 435
 Ala Ile Thr Asn Gly Thr Asn Asn Asp Ile Thr Thr Ala Ala Gln
 440 445 450
 Tyr Asp Ala Ala Thr Glu Ile Arg Asn Asn Thr Asn Phe Arg Gly
 455 460 465
 Met Tyr Ile Cys Gly Ser Leu Gln Arg Ala Trp Gly Asp Lys Lys
 470 475 480
 Ile Ser Asn Thr Ala Phe Ile Thr Thr Gly Thr Val Asp Gly Ala
 485 490 495
 Lys Leu Ile Pro Ser Asn Thr Ile Asp Gln Thr Lys Ile Ala Val
 500 505 510
 Phe Gln Asp Thr His Ala Asn Lys His Val Gln Thr Ser Asp Asp
 515 520 525

0
 1
 2
 3
 4
 5
 6
 7
 8
 9

Thr Leu Ala Leu Leu Gly Tyr Thr Gly Ile Gly Glu Glu Ala Ile
530 535 540
Gly Ala Asp Arg Asp Arg Val Val Arg Ile Ser Val Leu Pro Glu
545 550 555
Arg Gly Ala Arg Gly Gly Asn His Pro Ile Phe His Lys Asn Ser
560 565 570
Ile Lys Leu Gly Tyr Val Ile Arg Ser Ile Asp Val Phe Asn Ser
575 580 585
Gln Ile Leu His Thr Ser Arg Gln Leu Ser Leu Asn His Tyr Leu
590 595 600
Leu Ser Pro Asp Ser Phe Ala Val Tyr Arg Ile Ile Asp Ser Asn
605 610 615
Gly Ser Trp Phe Asp Ile Gly Ile Asp Asn Asp Gly Phe Ser Phe
620 625 630
Val Gly Val Ser Ser Ile Gly Lys Leu Glu Phe Pro Leu Thr Ala
635 640 645
Ser Tyr Met Gly Ile Gln Leu Ala Lys Ile Arg Leu Ala Ser Asn
650 655 660
Ile Arg Ser Val Met Thr Lys Leu
665

<210> 23

<211> 262

<212> PRT

<213> feline infectious peritonitis virus

<220>

<223>

<400> 1

Met Lys Tyr Ile Leu Leu Ile Leu Ala Cys Ile Ile Ala Cys Val

1 5 10 15

Tyr Gly Glu Arg Tyr Cys Ala Met Gln Asp Ser Gly Leu Gln Cys
 20 25 30

Ile Gln Gly Thr Gln Ser Arg Cys Gln Thr Cys Phe Glu Arg Gly
 35 40 45

Asp Leu Ile Trp His Leu Ala Asn Trp Asn Phe Ser Trp Ser Val
 50 55 60

Ile Leu Ile Val Phe Ile Thr Val Leu Gln Tyr Gly Arg Pro Gln
 65 70 75

Phe Ser Trp Leu Val Tyr Gly Ile Lys Met Leu Ile Met Trp Leu
 80 85 90

Leu Trp Pro Ile Val Leu Ala Leu Thr Ile Phe Asn Ala Tyr Ser
 95 100 105

Glu Tyr Gln Val Ser Arg Tyr Val Met Phe Gly Phe Ser Val Ala
 110 115 120

Gly Ala Val Val Thr Phe Ala Leu Trp Met Met Tyr Phe Val Arg
 125 130 135

Ser Val Gln Leu Tyr Arg Axg Thr Lys Ser Trp Trp Ser Phe Asn
 140 145 150

Pro Glu Thr Asn Ala Ile Leu Cys Val Asn Ala Leu Gly Arg Ser
 155 160 165

Tyr Val Leu Pro Leu Asp Gly Thr Pro Thr Gly Val Thr Leu Thr
 170 175 180

Leu Leu Ser Gly Asn Leu Tyr Ala Glu Gly Phe Lys Met Ala Gly
 185 190 195

Gly Leu Thr Ile Glu His Leu Pro Lys Tyr Val Met Ile Ala Thr
 200 205 210

Pro Ser Arg Thr Ile Val Tyr Thr Ile Val Gly Lys Gln Leu Lys
 215 220 225

Ala Thr Thr Ala Thr Gly Trp Ala Tyr Tyr Val Lys Ser Lys Ala

BROWNSTEIN

101-30782-2

230 235 240

Gly Asp Tyr Ser Thr Glu Ala Arg Thr Asp Asn Leu Ser Glu His
245 250 255

Glu Lys Leu Leu His Met Val
260

<210> 24

<211> 377

<212> PRT

<213> feline infectious peritonitis virus

<220>

<223>

<400> 1

Met Ala Thr Gln Gly Gln Arg Val Asn Trp Gly Asp Glu Pro Ser
1 5 10 15

Lys Arg Arg Gly Arg Ser Asn Ser Arg Gly Arg Lys Asn Asn Asp
20 25 30

Ile Pro Leu Ser Phe Tyr Asn Phe Ile Thr Leu Glu Gln Glu Ser
35 40 45

Lys Phe Trp Asn Leu Cys Pro Arg Asp Leu Val Pro Lys Gly Ile
50 55 60

Gly Asn Lys Asp Gln Gln Ile Gly Tyr Trp Asn Arg Gln Ile Arg
65 70 75

Tyr Arg Ile Val Lys Gly Gln Arg Lys Glu Leu Ala Glu Arg Trp
80 85 90

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Phe Phe Tyr Phe Leu Gly Thr Gly Phe His Ala Asp Ala Lys Phe
95 100 105

Lys Asp Lys Ile Asp Gly Val Phe Trp Val Ala Arg Asp Gly Ala
110 115 120

Met Asn Lys Pro Thr Thr Leu Gly Thr Arg Gly Thr Asn Asn Glu
125 130 135

Ser Lys Pro Leu Arg Phe Asp Gly Lys Ile Pro Pro Gln Phe Gln
140 145 150

Leu Glu Val Asn Arg Ser Arg Asn Asn Ser Arg Ser Gly Ser Gln
155 160 165

Ser Arg Ser Val Ser Arg Asn Arg Ser Gln Ser Arg Gly Arg His
170 175 180

His Ser Asn Asn Gln Asn Asn Asn Val Glu Asp Thr Ile Val Ala
185 190 195

Val Leu Glu Lys Leu Gly Val Thr Asp Lys Gln Arg Ser Arg Ser
200 205 210

Lys Pro Arg Glu Arg Ser Asp Ser Lys Pro Arg Asp Thr Thr Pro
215 220 225

Lys Asn Ala Asn Lys His Thr Trp Lys Lys Thr Ala Gly Lys Gly
230 235 240

Asp Val Thr Thr Phe Tyr Gly Ala Arg Ser Ser Ser Ala Asn Phe
245 250 255

Gly Asp Ser Asp Leu Val Ala Asn Gly Asn Ala Ala Lys Cys Tyr
260 265 270

Pro Gln Ile Ala Glu Cys Val Pro Ser Val Ser Ser Ile Ile Phe
275 280 285

Gly Ser Gln Trp Ser Ala Glu Glu Ala Gly Asp Gln Val Lys Val
290 295 300

Thr Leu Thr His Thr Tyr Tyr Leu Pro Lys Asp Asp Ala Lys Thr
305 310 315

Ser Gln Phe Leu Glu Gln Ile Asp Ala Tyr Lys Atg Pro Ser Glu
320 325 330

Val Ala Lys Asp Gln Arg Gln Arg Arg Ser Arg Ser Lys Ser Ala
335 340 345

Asp Lys Lys Pro Glu Glu Lys Ser Val Thr Leu Val Glu Ala Tyr
350 355 360

Thr Asp Val Phe Asp Asp Thr Gln Val Glu Met Ile Asp Glu Val
365 370 375

Thr Asn
377

<210> 25

<211> 642

<212> PRT

<213> feline leukemia virus

<220>

<223>

<400> 1

Met Glu Ser Pro Thr His Pro Lys Pro Ser Lys Asp Lys Thr Leu
1 5 10 15

Ser Trp Asn Leu Ala Phe Leu Val Gly Ile Leu Phe Thr Ile Asp
20 25 30

Ile Gly Met Ala Asn Pro Ser Pro His Gln Ile Tyr Asn Val Thr
35 40 45

Trp Val Ile Thr Asn Val Gln Thr Asn Thr Gln Ala Asn Ala Thr
50 55 60

Ser Met Leu Gly Thr Leu Thr Asp Ala Tyr Pro Thr Leu His Val
65 70 75

Asp Leu Cys Asp Leu Val Gly Asp Thr Trp Glu Pro Ile Val Leu
80 85 90

Asn Pro Thr Asn'Val Lys His Gly Ala Arg Tyr Ser Ser Ser Lys
95 100 105

Tyr Gly Cys Lys Thr Thr Asp Arg Lys Lys Gln Gln Gln Thr Tyr
110 115 120

Pro Phe Tyr Val Cys Pro Gly His Ala Pro Ser Leu Gly Pro Lys
125 130 135

Gly Thr His Cys Gly Gly Ala Gln Asp Gly Phe Cys Ala Ala Trp
140 145 150

Gly Cys Glu Thr Thr Gly Glu Thr Trp Trp Lys Pro Thr Ser Ser
155 160 165

Trp Asp Tyr Ile Thr Val Lys Arg Gly Ser Ser Gln Asp Asn Ser
170 175 180

Cys Glu Gly Lys Cys Asn Pro Leu Val Leu Gln Phe Thr Gln Lys
185 190 195

Gly Arg Gln Ala Ser Trp Asp Gly Pro Lys Met Trp Gly Leu Arg
200 205 210

Leu Tyr Arg Thr Gly Tyr Asp Pro Ile Ala Leu Phe Thr Val Ser
215 220 225

Arg Gln Val Ser Thr Ile Thr Pro Pro Gln Ala Met Gly Pro Asn
230 235 240

Leu Val Leu Pro Asp Gln Lys Pro Pro Ser Arg Gln Ser Gln Thr
245 250 255

Gly Ser Lys Val Ala Thr Gln Arg Pro Gln Thr Asn Glu Ser Ala
260 265 270

Pro Arg Ser Val Ala Pro Thr Thr Met Gly Pro Lys Arg Ile Gly
275 280 285

Thr Gly Asp Arg Leu Ile Asn Leu Val Gln Gly Thr Tyr Leu Ala
290 295 300

Leu Asn Ala Thr Asp Pro Asn Lys Thr Lys Asp Cys Trp Leu Cys
305 310 315

Leu Val Ser Arg Pro Pro Tyr Tyr Glu Gly Ile Ala Ile Leu Gly
320 325 330

Asn Tyr Ser Asn Gln Thr Asn Pro Pro Pro Ser Cys Leu Ser Ile
335 340 345

Pro Gln His Lys Leu Thr Ile Ser Glu Val Ser Gly Gln Gly Met
350 355 360

Cys Ile Gly Thr Val Pro Lys Thr His Gln Ala Leu Cys Asn Lys
365 370 375

Thr Gln Gln Gly His Thr Gly Ala His Tyr Leu Ala Ala Pro Asn
380 385 390

Gly Thr Tyr Trp Ala Cys Asn Thr Gly Leu Thr Pro Cys Ile Ser
395 400 405

Met Ala Val Leu Asn Trp Thr Ser Asp Phe Cys Val Leu Ile Glu
410 415 420

Leu Trp Pro Arg Val Thr Tyr His Gln Pro Glu Tyr Val Tyr Thr
425 430 435

His Phe Ala Lys Ala Val Arg Phe Arg Axg Glu Pro Ile Ser Leu
440 445 450

Thr Val Ala Leu Met Leu Gly Gly Leu Thr Val Gly Gly Ile Ala
455 460 465

Ala Gly Val Gly Thr Gly Thr Lys Ala Leu Leu Glu Thr Ala Gln
470 475 480

Phe Arg Gln Leu Gln Met Ala Met His Thr Asp Ile Gln Ala Leu
485 490 495

Glu Glu Ser Ile Ser Ala Leu Glu Lys Ser Leu Thr Ser Leu Ser
500 505 510

Glu Val Val Leu Gln Asn Arg Arg Glu Leu Asp Ile Leu Phe Leu
515 520 525

Gln Glu Gly Gly Leu Cys Ala Ala Leu Lys Glu Glu Cys Cys Phe
530 535 540

Tyr Ala Asp His Thr Gly Leu Val Arg Asp Asn Met Ala Lys Leu
545 550 555

Arg Glu Arg Leu Lys Gln Arg Gln Gln Leu Phe Asp Ser Gln Gln
560 565 570

Gly Trp Phe Glu Gly Trp Phe Asn Lys Ser Pro Trp Phe Thr Thr
575 580 585

Leu Ile Ser Ser Ile Met Gly Pro Leu Leu Ile Leu Leu Leu Ile
590 595 600

Leu Leu Phe Gly Pro Cys Ile Leu Asn Arg Leu Val Gln Phe Val
605 610 615

Lys Asp Axg Ile Ser Val Val Gln Ala Leu Ile Leu Thr Gln Gln
620 625 630

Tyr Gln Gln Ile Lys Gln Tyr Asp Pro Asp Arg Pro
635 640